I CLAIM:

1. A method for operation of a position measuring device, which comprises a scanning unit that defines a scanning plane and a measuring graduation that defines a measuring graduation plane, said scanning unit and said measuring graduation are movable relative to one another during a measurement operation, and position-dependent output signals are generated during scanning performed by said scanning unit, said method comprising:

regulating said position-dependent output signals to constant signal amplitudes by action on a controlling variable;

ascertaining a value of said controlling variable required for said regulating; and

displaying said value of said controlling variable.

2. The method of claim 1, further comprising:

converting said value of the controlling variable into a digital signal suitable for serial transmission; and

transmitting said digital signal to an electronic evaluation unit downstream of said position measuring device.

3. The method of claim 1, further comprising:

setting a scanning spacing (D) between said scanning plane and said measuring graduation plane with the aid of said displayed value of said controlling variable, which acts as a measure for a current scanning spacing (D) for setting a predetermined, optimal scanning spacing (D).

4. The method of claim 1, wherein said regulating said position-dependent output signals to a constant signal amplitude comprises varying a current supply of a transmission coil as a function of said controlling variable.

5. The method of claim 1, wherein said regulating said position-dependent output signals to a constant signal amplitude comprises varying a

gain of an amplifier element as a function of said controlling variable.

6. The method of claim 1, wherein the regulating said position-dependent output signals to a constant signal amplitude comprises varying a luminosity of a light source as a function of said controlling variable.

7. The method of claim 2, further comprising transmitting said digital signal in a serial protocol at a predetermined bit width to said electronic evaluation unit.

8. The method of claim 3, further comprising converting said transmitted value of said controlling variable into a variable that corresponds directly to said current scanning spacing (D).

9. The method of claim 1, wherein said displaying comprises having said value of said controlling variable displayed in a form of an alphanumeric variable.

10. The method of claim 1, wherein said displaying comprises having said value of said controlling variable displayed in graphic form.

11. The method of claim 2, wherein said setting is performed by a calibration element.

12. The method of claim 1, wherein said position-dependent output signals comprise a first periodic signal $A = A_0 * \sin(xt)$ and a second periodic signal $B = B_0 * \cos(xt)$, said method further comprising:

forming a variable $R^2 = A^2 + B^2$ which is representative of said value of said controlling variable used during said regulating.

13. A position measuring device for generating position-dependent

output signals, comprising:

a scanning element by which a scanning plane is defined;

a measuring graduation movable relative to said scanning element and defining a measuring graduation plane;

a regulating device for regulating output signals to constant signal amplitudes, in that said regulating device acts upon a predetermined controlling variable, to which end a requisite value of said controlling variable for the purpose of regulating is ascertained continuously by said regulating device.

14. The position measuring device of claim 13, further comprising a conversion device for converting said value of said controlling variable into a digital signal suitable for serial transmission.

15. The position measuring device of claim 13, further comprising a calibration elements for setting a scanning spacing (D), which is defined as the spacing between said scanning plane and said measuring graduation plane.

16. The position measuring device of claim 14, wherein said conversion device is followed by a transmission device for transmitting said digital signal to an electronic evaluation unit.

17. The position measuring device of claim 16, wherein said transmission device is embodied as a synchronous serial interface.

18. The position measuring device of claim 16, further comprising a display device that displays said transmitted value of said controlling variable.

19. The position measuring device of claim 13, further comprising a transmission coil and a reception coil in said scanning plane.

20. The position measuring device of claim 19, wherein said

regulating device varies a current supply of said transmission coil as a controlling variable.

21. The position measuring device of claim 13, wherein said regulating device varies an amplitude of an amplifier element as a function of said controlling variable.

22. The position measuring device of claim 13, further comprising a light source and a detector element.

23. The position measuring device of claim 22, wherein said regulating device varies a luminosity of said light source, to which end a current of said light source, as a controlling variable, can be varied.

24. A method for operation of a position measuring device, which comprises a scanning unit that defines a scanning plane and a measuring graduation that defines a measuring graduation plane, said scanning plane and said measuring graduation plane being separated by a scanning spacing, said scanning unit and said measuring graduation are movable relative to one another during a measurement operation, and position-dependent output signals are generated during scanning performed by said scanning unit, said method comprising:

regulating said position-dependent output signals to constant signal amplitudes by action on a controlling variable;

ascertaining a value of said controlling variable required for said regulating;

converting said controlling variable into a variable that directly corresponds to an actual scanning spacing; and

displaying said value of said variable that directly corresponds to said actual scanning spacing.

25. The method of claim 24, further comprising:

converting said value of said controlling variable into a digital signal suitable for serial transmission; and

transmitting said digital signal to an electronic evaluation unit downstream of said position measuring device.

26. The method of claim 24, further comprising:

setting a scanning spacing (D) between said scanning plane and said measuring graduation plane with the aid of said displayed value of said variable that directly corresponds to said actual scanning spacing, which acts as a measure for a current scanning spacing (D) for setting a predetermined, optimal scanning spacing (D).

27. The method of claim 24, wherein said regulating said position-dependent output signals to a constant signal amplitude comprises varying a current supply of a transmission coil as a function of said controlling variable.

28. The method of claim 24, wherein said regulating said position-dependent output signals to a constant signal amplitude comprises varying a gain of an amplifier element as a function of said controlling variable.

29. The method of claim 24, wherein said regulating said position-dependent output signals to a constant signal amplitude comprises varying a luminosity of a light source as a function of said controlling variable.

30. The method of claim 25, further comprising transmitting said digital signal in a serial protocol at a predetermined bit width to said electronic evaluation unit.

31. The method of claim 24, wherein said displaying comprises having said value of said variable that directly corresponds to said actual

scanning spacing displayed in a form of an alphanumeric variable.

32. The method of claim 24, wherein said displaying comprises having said value of said variable that directly corresponds to said actual scanning spacing displayed in graphic form.

33. The method of claim 25, wherein said setting is performed by a calibration element.

34. The method of claim 24, wherein said position-dependent output signals comprise a first periodic signal $A = A_0 * \sin(xt)$ and a second periodic signal $B = B_0 * \cos(xt)$, said method further comprising:

forming a variable $R^2 = A^2 + B^2$ which is representative of said value of said controlling variable used during said regulating.